

SAN BERNARDINO COUNTY FIRE DEPARTMENT



COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

EMERGENCY MEDICAL SERVICES, TRAINING & SAFETY DIVISION
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PAT A. DENNEN
Fire Chief
County Fire Warden

Statewide Training And Education Advisory Committee
State Fire Training
1131 "S" St.
Sacramento, CA 95811

November 17th, 2008

Respected STEAC Members,

The San Bernardino County Fire Department requests that the current Low Angle Rope Rescue Operational (LARRO) curriculum (approved by STEAC on August 18th, 2006 and by the State Board of Fire Services on August 15th, 2007) be revised. The specific reasons that we believe the LARRO curriculum needs revision are listed below.

- The LARRO curriculum does not meet applicable California Department of Occupational Safety and Health (DOSH) and Federal OSHA regulations.
- The LARRO curriculum does not meet applicable NFPA Standards.
- The LARRO curriculum does not support rope rescue evolutions utilizing the OES Light US&R equipment cache.
- As a prerequisite to Rescue Systems 1, the LARRO curriculum does not prepare students for a seamless transition into additional rope rescue training as presented in Rescue Systems 1 (current and new curricula).
- The LARRO curriculum is regionally based and does not reflect methodology currently recognized by the overwhelming majority of Fire Department rescuers in California.
- The LARRO curriculum is too long.

The bullet points above were developed as the result of an in-depth review of the LARRO Instructor/Student Manual, communications with DOSH, review of LARRO rollout course evaluations, and conversations with many experienced instructors. The following text offers explanatory material in support of the above.

The LARRO curriculum does not meet applicable California Department of Occupational Safety and Health (DOSH) and Federal OSHA regulations. This is the most compelling reason why the current LARRO curriculum is in need of an edit. The LARRO Instructor/Student manual indicates that an NFPA Class II harness (pelvic-type) is appropriate for Low Angle Rescue. This assertion is in direct conflict with several sections of Title 8 of the California Code of Regulations, specifically: sections 3207(a) Personal Fall Arrest System; 1504(a) Body Harness; 3270.1(c)1-4, (j) & (j)1; 1670(a) & (b). These sections require the use of a full-body harness (NFPA Type III harness that meets ANSI Z359.1-1992) while performing rope access work such as low angle rope rescue in addition to other requirements.

In December of 2004, San Bernardino County Fire Department made a written request to the Chief of the California Department of Occupational Safety and Health (DOSH) requesting a written interpretation of several sections of the California Code of Regulations, Title 8 and it's applicability to Fire Departments training for rope rescue. A written response from DOSH was received in March of

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2005 and a supplemental response was received a few days later (copies of both are attached in one document, identified by subject, Application of Rope Access and Fall Protection Regulations to Fire Department Operations). Both documents make it very clear that DOSH requires full compliance with sections 3270.1 and 1670 (and associated sections 3207 and 1504) by Fire Departments engaged in training activities for rope rescue. The two written responses were signed by DOSH Principle Safety Engineer, Larry McCune and were written By Patrick Bell. Among many other requirements, the above sections of Title 8 require the use of full-body harnesses (also known in the Fire Service as NFPA class III). Pelvic-type harnesses such as an NFPA class II harness do not meet the requirements of the regulation.

Patrick Bell of DOSH attended a few meetings of the LARRO curriculum development committee. His name appears on the acknowledgements page of the LARRO Instructor/Student manual as a contributor (pg.ii). Oddly, NFPA class II harnesses are indicated in the LARRO Instructor/Student manual as appropriate for Low Angle Rescue training and emergency response. The term Low Angle Rescue is defined by NFPA (and others) as, "Refers to an environment in which the load is predominantly supported by itself and not the rope rescue system (e.g., flat land or mild sloping surface)." A literal interpretation means more weight is on the rescuers feet than on the rope rescue system they are attached to. The rescuers, their gear, and their patient (if any) represent the "load". As the incline they are operating on increases in steepness, the weight on the rope rescue system increases. Rope rescue experts generally agree that what the above means is that a low angle rope rescue environment includes all slopes up to 40 – 45 degrees. The condition of the surface rescuers are working on can add or subtract from the weight acting upon the rope rescue system (i.e. soft ground, mud, snow, ice, scree, rock, etc.). Obviously, Low Angle Rope Rescue encompasses many levels of fall hazard from the inconsequential to the extremely hazardous. DOSH is very clear on the matter: if a fall hazard is present (greater than 30") and/or while performing rope access work, then the above sections of Title 8 apply to Firefighters. Rope Access is defined in 8CCR 3207 as, "The use of rope access equipment where ropes are used as the primary means of support, as a means of protection or positioning, and where an employee descends or ascends on a rope, or traverses along a rope." Rope Access Equipment is defined in 8CCR 3207 as, "Specialized equipment approved for use with rope access techniques to suspend, support, position, or protect an employee." No written exemption of Title 8 requirements for Firefighters performing Low Angle Rescue training has ever been published. An exemption does appear for emergency search and rescue operations in 8CCR 3270.1, but it is strictly for emergency operations and not for training.

Patrick Bell was contacted by phone in the hopes of obtaining clarification in the apparent contradiction of the LARRO text and his written interpretation of Title 8 as it applies to Firefighters training for rope rescue. When given a theoretical Low Angle scenario of Firefighters accessing a patient over-the-side on a 40-degree smooth granite slope, 300 feet down, he indicated a full-body harness and all provisions of Title 8 sections 3270.1 and 1670 would apply. Many Fire Departments in California regularly respond to over-the-side incidents with similar conditions to the theoretical scenario above including our Fire Department.

There are those who argue that in very low angle environments, a fall potential is virtually non-existent and consequently, a NFPA class II harness would offer acceptable protection to the wearer. Unfortunately, not all low angle rope rescue scenarios are as benign as that. And more importantly, DOSH is clear in it's requirements for workers on-rope no matter how mild the slope: A full-body harness (NFPA class III), a main and safety line, each with their own dedicated anchor, and other requirements (see 8CCR 3270.1, 8CCR 3270, & 8CCR 1504). If the official training manual of State Fire Training for low angle rope rescue indicates that a NFPA class II harness is appropriate for low angle rope rescue use, then many firefighters will follow that recommendation even in situations where

a NFPA class II harness would not only be illegal, but dangerous as well. Professional and volunteer Firefighters alike are trained in California to be prepared for the worst, such as dressing in full structural Firefighting protective ensemble for fighting vehicle fires, dumpster fires and interior structural firefighting as well. We never lower our guard because someone believes one situation is less of a threat than another. If we leave the decision of when to don a NFPA class II or class III harness in the hands of Firefighters, there will inevitably be mistakes. If the LARRO text clearly states that NFPA class III harnesses shall be used in all low angle rope rescue scenarios, then Firefighters will be afforded more protection and will be in compliance with legal requirements in every low angle rope rescue scenario. The LARRO text states on page 79 regarding attaching rescuers to a rope rescue system, "Attachment at front waist D-ring can allow rescuer to completely invert in the event of a fall, or foot entrapment during lowering operations." This possibility is addressed directly by DOSH in their Application of Rope Access and Fall Protection Regulations to Fire Department Operations document (attached). See pages 6 and 7, question # 4 and the answer from DOSH. NFPA class II harnesses do not meet the requirements of the sections of Title 8 noted in the answer to question 4, specifically, 8CCR 1670, Personal fall arrest systems. Personal fall arrest systems are defined in 8CCR 3207 as, "A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of the aforementioned components/devices." A body harness is defined in 8CCR 1504 as, "Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist chest and shoulders with means for attaching it to other components of a personal fall arrest system." In other words, a full-body type harness such as an NFPA class III, meeting ANSI Z359.1-1992 requirements.

8CCR 3270.1 requires employers to establish, implement and maintain a written Code of Safe Practices for rope access work. Additionally, it requires that employees be trained in accordance with the written Code of Safe Practices, and that they receive annual refresher training. Other requirements of Title 8 apply to Firefighters and their employers performing training for rope rescue too numerous to list here. None of the above is mentioned in the LARRO Instructor/Student manual. By contrast, the current and old student manuals for Confined Space Rescue Technician references the California Code of Regulations Title 8 extensively with emphasis of what legal requirements apply to rescuers and their employers. Why does one student manual of the Tec Rescue series devote considerable attention to the law, while another is virtually mute on the subject? Continuity in the Tec Rescue series should be a critical element in the curriculum development and approval process.

The LARRO curriculum does not meet applicable NFPA Standards. NFPA 1670 section 4.1.10 requires that, "The AHJ (authority having jurisdiction) shall comply with all applicable local, state and federal laws". The discussion in the preceding paragraphs indicates that the LARRO curriculum is in contradiction with applicable laws and does not address the applicability of law to Firefighters and their employers who engage in low angle rope rescue training and emergency response.

NFPA 1670 section 4.1.2 requires (in part) that, "The same techniques used in a search and rescue operation shall be considered equally useful for training...". Section 4.1.2 requires that, "The AHJ shall establish written standard operating procedures consistent with one of the following operational levels: [Awareness, Operations, Technician]...". Several other requirements of NFPA 1670, 1500, 1983, and 1006 apply to Firefighters and their employers performing training for rope rescue too numerous to list here.

None of the above is mentioned in the LARRO Instructor/Student manual.

The LARRO curriculum does not support rope rescue evolutions utilizing the OES Light US&R equipment cache. The rope rescue evolutions that are illustrated and explained within the LARRO text exceed the Governor's Office of Emergency Services (OES) cache of rope rescue equipment for Light Rescue US&R Companies as listed in Firescope ICS-US&R-120-1. All OES fire engines distributed throughout California are now equipped with a "Light" US&R cache of equipment which includes plenty of gear to perform a variety of Low Angle Rope Rescue operations using generally accepted methodology. Unfortunately, if one follows the lessons in the LARRO text when working with an OES Light US&R cache, one will not be able to build the rope rescue systems as described or illustrated. Firescope ICS-US&R-120-1 has established a standard that Fire Departments throughout California utilize as the basis for rope rescue operations.

As a prerequisite to Rescue Systems 1, the LARRO curriculum does not prepare students for a seamless transition into additional rope rescue training as presented in Rescue Systems 1 (current and new curricula). The methodology presented in the LARRO text is a complete departure from established, widely recognized rope rescue techniques that have evolved over that last few decades in California. The most recent curriculum that officially addresses low angle rope rescue is the current Rescue Systems 1 curriculum (December 2000). The methodology appearing in that text - however brief - has become the standard in our state today. An expansion and refinement of that methodology that included some new concepts is what most instructors were hoping for out of the LARRO curriculum development project, not a start-from-scratch approach. Additionally, the new R.S.1 curriculum includes information that builds on the methodology appearing in the December 2000 text. Unfortunately, the LARRO text will not dovetail into the new R.S.1 curriculum, due to the fact that it is a complete departure from established methodology.

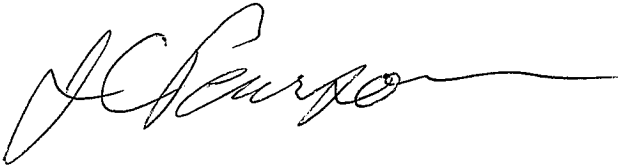
The LARRO curriculum is regionally based and does not reflect methodology currently recognized by the overwhelming majority of Fire Department rescuers in California. The LARRO text Acknowledgements page (ii), lists the principle developers of the document - there are a total of nine. Eight of them are from region IV. One is from region I. A regional bias cannot be averted if nearly all participants of a curriculum development committee are from a single region. A principle advantage enjoyed by State Fire Training is the ability to draw from a geographically diverse selection of subject matter experts in development of statewide curriculum and standards. Several subject matter experts from various regions of California attempted to be included on the LARRO curriculum development committee unsuccessfully. Sadly, no effective peer review process was undertaken before the release of the course.

The LARRO curriculum is too long. As a prerequisite to Rescue Systems 1, four hours of low angle rope rescue was removed from the new Rescue Systems 1 curriculum and has now been expanded to twenty-four hours with the LARRO curriculum. The old low angle rescue curriculum was sixteen hours. The addition of three days of training for those wishing to attend Rescue Systems 1 and other Tec Rescue courses, places a substantial burden on Fire Departments in the form of back-fill costs. Given our state's current economic environment, additional demands placed upon statewide resources should be carefully considered. Most agree that Low Angle should be a stand-alone course, but that a two-day, sixteen hour format would cover the required material adequately.

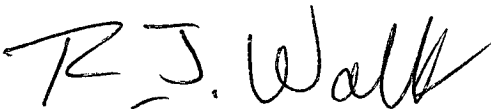
San Bernardino County Fire Department believes the above observations of the LARRO curriculum are accurate, but understands that additional feedback from other individuals and Departments should be considered. A questionnaire polling California's most active Low Angle and Rescue Systems instructors on the matter would be of great value. Additionally, a review of the student evaluations from the first three rollout courses would also be of considerable value.

Low Angle Rope Rescue can be performed quite easily in full compliance with the law and in a safe and expeditious manner. An edit of the LARRO Instructor/Student manual could be accomplished rather rapidly and at very little cost. A small group of experienced Low Angle Rope Rescue instructors from several of California's six regions could handle the task based upon what is learned from the proposed instructor's questionnaire. Meetings could be conducted solely via conference call with no travel required. San Bernardino County Fire Department is happy to provide subject matter experts to assist with the proposed editing effort at no cost to State Fire Training.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. Pearson", with a long horizontal flourish extending to the right.

Jim Pearson, Captain
Technical Rescue Coordinator
CA Regional US&R Task Force 6 Program Manager
San Bernardino County Fire Department

A handwritten signature in black ink, appearing to read "R. J. Walls", with a stylized, looped end.

Ron Walls, Battalion Chief,
Training & Safety Division
San Bernardino County Fire Department

A handwritten signature in black ink, appearing to read "Gary Provansal", with a large, sweeping loop at the end.

Gary Provansal, Division Chief,
Training, Safety & Emergency Medical Services Division
San Bernardino County Fire Department

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March 4, 2005

Jim Pearson, Captain
San Bernardino County Fire Department
2824 East W Street, Building 302
San Bernardino, CA 92415-0451

Subject: **Application of Rope Access and Fall Protection Regulations to Fire Department Operations**

Dear Captain Pearson:

In your recent letter to the Chief of the Division of Occupational Safety and Health you have asked some 11 questions which range widely through the California Safety Orders with a central theme relating to training for rope access and fall protection as applicable to fire department search and rescue operations. This reply letter will address the specific questions posed and provide a measure of guidance concerning the application of CalOSHA regulations for employee training.

Question No. 1:

Do all provisions of CCR, title 8, Section 3270.1 apply to fire department employees who perform training for response to emergency search and rescue operations involving rope access (as defined in CCR, Title 8, Section 3207)? If not, which provision(s), specifically (if any) do apply?

Answer: All employees must receive training in the recognized hazards of their jobs and the use of safety devices and safe practices applicable thereto [8CCR 3203, q.v.]. The specific rope access regulations contained in section 3270.1, however, are not applicable to emergency search and rescue operations. See exception no. 2 to subsection 3270.1(a).

Question No. 2:

Do all provisions of CCR, Title 8, Section 1670 apply to fire department employees who perform training for response to emergency search and rescue operations involving rope access (as defined in CCR, Title 8, 3207)? If not, which provision(s), specifically (if any) do apply?

Answer: Yes.

Question No.3:

Do all provisions of CCR, Title 8, Section 1670 apply to fire department employees whose training work exposes them to falling in excess of 7-1/2 feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaftways and opening, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of CCR, Title 8, Subchapter 4?

Answer: Yes.

Question No. 4:

Do the requirements of Personal Fall Arrest Systems (as defined in CCR, Title 8, Section 1504) apply to fire department employees training for emergency search and rescue operations rather than Personal Fall Restraint (as defined in CCR, Title 8, Section 1504) or Positioning Device Systems (as defined in CCR, Title 8, Section 3207) when the possibility of a fall of any type or becoming inverted cannot be eliminated?

Answer:

Where employees are subject to the hazard of falling from a height greater than 30 inches above the surrounding floor or ground level and they are not protected by guardrails as set forth in 8CCR 3210 the requirements of section 1670 apply, except where more specific standards control, e.g.: 8CCR 1710(m) for steel erection, 8CCR 1716.2 for residential framing.

Question No. 5:

Does any part of Section 8615(g) of the telecommunications safety Orders apply to fire department employees training for emergency search and rescue operations on poles, towers, or similar structures? If so, which part(s) specifically?

Answer: No. The use of fall protection systems and work methods specific to work on telecommunication systems equipment and related structures performed by [telecommunication workers] are not appropriate to fire department operations.

Question No. 6:

Does any part of Section 2940.6(b) and (c) of the High-voltage Safety Orders apply to fire department employees training for emergency search and rescue operations at elevated locations on poles, towers and other structures? If so, which part(s) specifically?

Answer: No. The use of fall protection systems and work methods specific to work on high-voltage equipment and related structures performed by qualified electrical workers are not appropriate to fire department operations. Only qualified electrical workers are permitted to perform work activities in conjunction with energized high-voltage systems.

Question No. 7:

Do any part of Articles 5 and 6 of the General Industry Safety Orders apply to fire department employees training for emergency search and rescue operation for window cleaning or exterior building maintenance personnel? If so, which part(s) specifically?

Answer:

Articles 5 and 6 of the General Industry Safety Orders apply to the work methods and equipment used in the performance of Window Cleaning and Building Maintenance. Fire Department personnel should not attempt to operate building equipment for which they have not received training.

8CCR 3282 Scope. This Article establishes safety requirements for the cleaning of all windows of all buildings. Window cleaning includes operation(s) of washing, wiping or other methods of cleaning windows, window frames, curtain wall components, building panels, etc.

NOTE: It is recognized because of special site conditions that certain provisions in Article 6 may be applicable and can be used in conjunction with equipment and/or practices in this article.

8CCR 3292(a) Scope.

(1) This article covers powered platform installations permanently dedicated to interior or exterior building maintenance of a specific structure or group of structures. This article does not apply to suspended scaffolds used for construction work and covered under Article 23 of the Construction Safety Orders. Building

maintenance includes, but is not limited to, such tasks as window cleaning, caulking, metal polishing and reglazing.

NOTE: It is recognized because of special site conditions that certain provisions contained in Article 5 may be applicable and can be used in conjunction with equipment and/or practices in this article.

Question No. 8:

Is the use of hand-tied harnesses or combination of hand-tied harnesses (using 1" tubular nylon webbing, 4,000 pound minimum breaking strength) allowed when used in conjunction with pelvic type harnesses (a commercially manufactured harness consisting of straps which may be secured about the employee in a manner that will distribute the fall arresting forces over the thighs, pelvis and waist) in place of a Body Harness in personal fall arrest systems (as defined in CCR, Title 8, Sections 1504 and 3207)?

Answer:

Title 8 section 1670 requires that only approved fall arrest, fall restraint or positioning systems shall be used for personal fall protection. Safety belts, harnesses and lanyards conforming to the requirements of 8CCR 1670(k) and (l) satisfy the approval requirement.

8CCR 1670(k) All safety belts, harnesses and lanyards placed in service or purchased on or before February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1975, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines and Drop Lines for Construction and Industrial Use or be in compliance with the requirement stated in Subsection (l).

8CCR 1670(l) All personal fall arrest, personal fall restraint and positioning device systems purchased or placed in service after February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1991 American National Standard for Construction and Demolition Use, or ANSI Z359.1-1992 American National Standard Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

Question No. 9:

Is the use of hand-tied harnesses or combination of hand-tied harnesses (using 1" tubular nylon webbing, 4,000 pound minimum breaking strength) allowed in any form of training for emergency search and rescue involving rope access work, personal fall arrest, personal fall restraint, or positioning device systems?

Answer:

See the answer provided for question no. 8.

Question No. 10:

Are there any regulations other than those referenced above that apply to fire department employees involved in training for emergency search and rescue involving rope access work, personal fall arrest, personal fall restraint, or positioning device systems?

Answer:

Public agency employers in California are subject to the occupational safety and health regulations contained in Title 8 Chapter 4. The specific parts that may bear on a particular employment setting would depend on the characterization of the work being performed, i.e.: General Industry, Construction, Electrical, and so on.

Most generally, an employer is responsible to develop and implement an effective Injury and Illness Prevention Program that is appropriate for the work environment of the enterprise [ref.: 8CCR 3203].

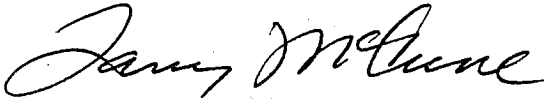
Question No. 11:

Have any fire departments in California been issued fines and/or citations by your agency for non-compliance of any of the above referenced regulations or other regulation relating to training for emergency search and rescue involving rope access work, personal fall arrest, personal fall restraint, or positioning device systems? If so, is it possible to review specific cases so that we may learn from their mistakes?

Answer:

A search of available online records of compliance activities covering the period from March 1994 through March of 2005 revealed no instances of enforcement actions against fire departments in California for violation of any of the regulations you have referenced in your letter. There remains the possibility that enforcement actions that are the subject of appeals before the Occupational Safety and Health Appeals Board may not have been reflected in the record.

Sincerely,



Larry McCune, PE
Principal Safety Engineer
DOSH

LLM/pb

File:

SEE FOLLOWING ATTACHMENTS (3 PGS.)

8CCR 3203

(a) Effective July 1, 1991, every employer shall establish, implement and maintain an effective Injury and Illness Prevention Program (Program). The Program shall be in writing and, shall, at a minimum:

(7) Provide training and instruction:

(A) When the program is first established;

EXCEPTION: Employers having in place on July 1, 1991, a written Injury and Illness Prevention Program complying with the previously existing Accident Prevention Program in Section 3203.

(B) To all new employees;

(C) To all employees given new job assignments for which training has not previously been received;

(D) Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;

(E) Whenever the employer is made aware of a new or previously unrecognized hazard; and,

(F) For supervisors to familiarize themselves with the safety and health hazards to which employees under their immediate direction and control may be exposed.

DEPARTMENT OF INDUSTRIAL RELATIONS

DIVISION OF OCCUPATIONAL SAFETY & HEALTH

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March 10, 2005

Jim Pearson, Captain
San Bernardino County Fire Department
2824 East W Street, Building 302
San Bernardino, CA 92415-0451

Subject: Application of Rope Access and Fall Protection Regulations to Fire Department Operations

Captain Pearson:

This letter is intended to supplement our responses to questions no. 1 and no. 4 as provided in our letter to you of March 4, 2005.

Question No. 1:

Do all provisions of CCR, title 8, Section 3270.1 apply to fire department employees who perform training for response to emergency search and rescue operations involving rope access (as defined in CCR, Title 8, Section 3207)? If not, which provision(s), specifically (if any) do apply?

Answer: All employees must receive training in the recognized hazards of their jobs and the use of safety devices and safe practices applicable thereto [8CCR 3203, q.v.]. The exception for emergency operations in section 3270.1(a) does not apply to training activities conducted by fire departments.

Question No. 4:

Do the requirements of Personal Fall Arrest Systems (as defined in CCR, Title 8, Section 1504) apply to fire department employees training for emergency search and rescue operations rather than Personal Fall Restraint (as defined in CCR, Title 8, Section 1504) or Positioning Device Systems (as defined in CCR, Title 8, Section 3207) when the possibility of a fall of any type or becoming inverted cannot be eliminated?

Answer:

Where employees are subject to the hazard of falling from a height greater than 30 inches above the surrounding floor or ground level and they are not protected by guardrails as set forth in 8CCR 3210 the requirements of section 1670 apply, except where more specific standards control, e.g.: 8CCR 1710(m) for steel erection, 8CCR 1716.2 for residential framing. In the case you present, such that the possibility of a fall cannot be eliminated, then a personal fall arrest system would be required for each person exposed to the hazard.

Fall Protection takes various forms. At least five forms of fall protection are recognized in the California Safety Orders and four of these are described in Article 24 of the Construction Safety Orders which contains standards for personal fall protection systems. These standards are incorporated by reference in the General Industry Safety Orders.

- Guardrails and parapets are passive fall prevention measures in that they require no active engagement by a person to achieve the desired effectiveness. Fall protection*

nets and opening covers may also be considered within the category of passive devices or systems in that they function without the necessity of active personal engagement.

- *Personal fall protection systems act on the person of a worker exposed to the hazard of falling and function by restricting travel to prevent falls or by arresting motion once a fall occurs. Personal fall protection takes three basic forms as described in 8CCR 1670:
1. Positioning device systems function by anchoring an individual at a work point and severely restricting the distance that the person is allowed to fall before the system is activated.
2. Personal Restraint systems limit access to the location of the fall hazard thereby preventing the restrained worker from falling altogether.
3. Personal fall arrest systems function by capturing a worker once a fall has occurred.*

Thank you for your interest in occupational safety and health. If you have need of further clarification on these matters, or if you would like assistance in other areas of workplace safety, you may contact Patrick Bell at 415-703-5196.

Sincerely,



Larry McCune, PE
Principal Safety Engineer
DOSH Research and Standards Unit

LM/pb

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